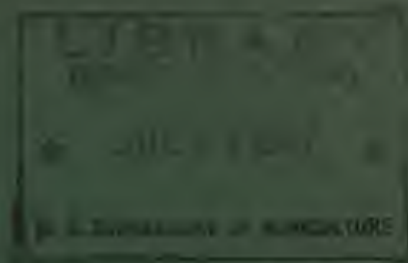


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FOREST STATISTICS
FOR THE
COASTAL PLAIN OF VIRGINIA, 1956

by

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Division of Forest Economics



U. S. Department of Agriculture
Forest Service

Southeastern Forest Experiment Station

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in cooperation with the
Virginia

Department of Conservation and Development
Division of Forestry

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FOREWORD

Through the McSweeney-McNary Act of 1928, Congress authorized the Secretary of Agriculture to conduct a comprehensive survey of the forest resources of the United States. The Forest Survey was organized by the Forest Service to carry out the provisions of the Act through the Regional Forest Experiment Stations. In the southeastern states the Forest Survey is an activity of the Division of Forest Economics, Southeastern Forest Experiment Station, Asheville, North Carolina.

The five-fold purpose of the Forest Survey is (1) to make a field inventory of the present supply of standing timber, (2) to ascertain the rate at which this supply is being increased through growth, (3) to determine the rate at which it is being reduced through industrial and domestic uses, fire, and other causes, (4) to determine the present consumption and the probable future trend in requirements for forest products, and (5) to interpret and correlate these findings to aid in the formulation of private and public policies regarding forest land management.

ACKNOWLEDGMENTS

The Southeastern Station received material assistance on the field phase of the Survey and wishes to acknowledge this cooperation. The Virginia Division of Forestry furnished personnel and equipment for one field crew, and the pulp and paper companies listed below contributed funds through Virginia Forests, Inc., to finance a second crew.

Camp Manufacturing Company	Johns-Manville Products Corp.
Chesapeake Corp. of Virginia	Mead Corporation
Continental Can Company	National Container Corp. of Va.
P. H. Glatfelter Company	West Virginia Pulp and Paper Co.

The Division of Forest Economics at the Southeastern Station is under the direction of J. F. McCormack. Collection of field data was supervised by Ronald C. Froelich and aerial photo interpretation was done by W. H. B. Haines. Other staff assistance was as follows:

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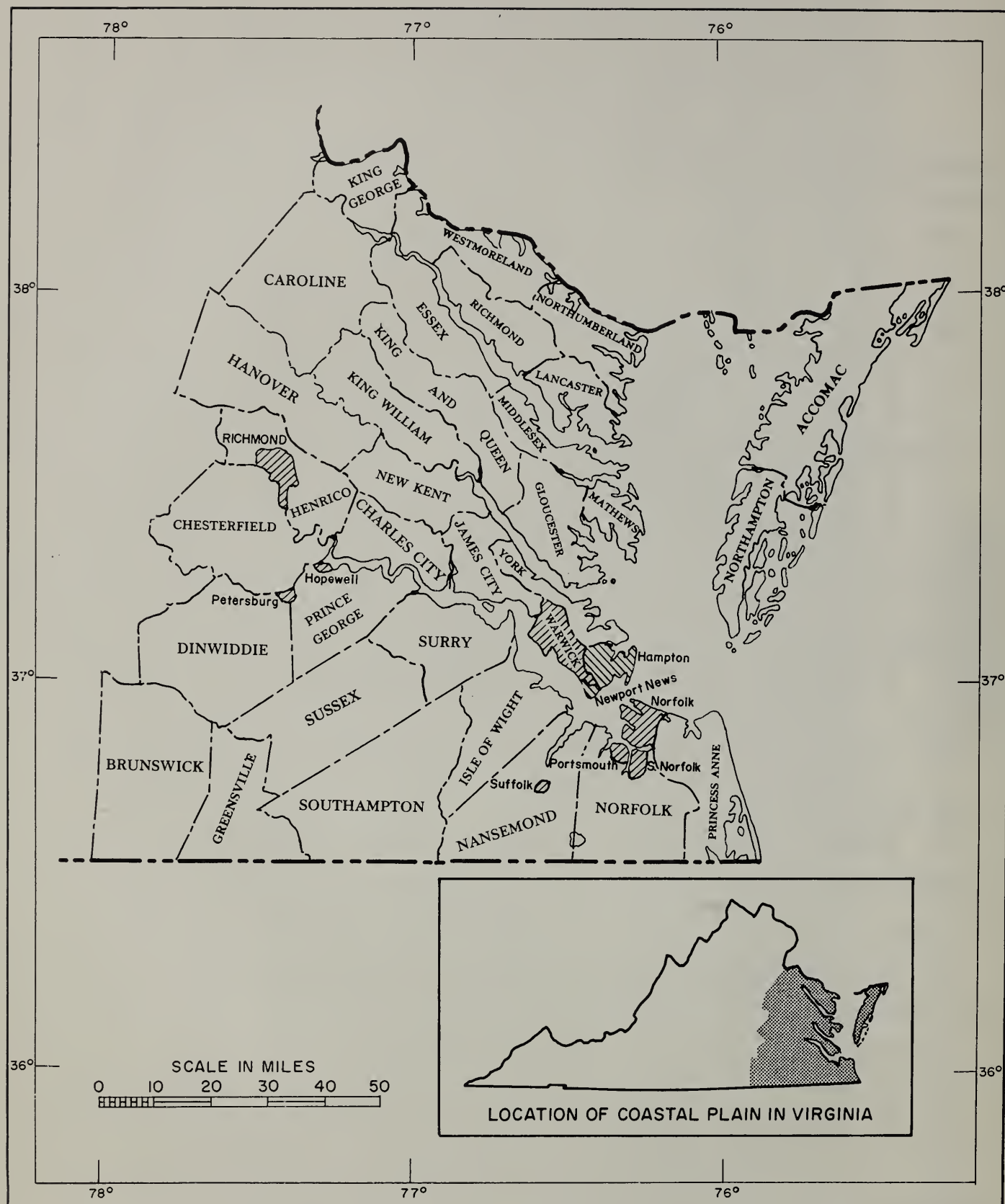


Figure 1.--Counties and independent (noncounty) cities in the Virginia Coastal Plain.

FOREST STATISTICS FOR THE COASTAL PLAIN

OF VIRGINIA, 1956

The Coastal Plain of Virginia lies in the eastern quarter of the State extending from the Potomac River to the North Carolina line (fig. 1). It includes 30 counties on the Virginia mainland west of Chesapeake Bay and the 2 counties on the Eastern Shore. The topography is rather flat along the coast and Chesapeake Bay, becoming gently rolling near the boundary with the Piedmont. The Potomac, Rappahannock, York, and James Rivers break the central and northern portion of the Coastal Plain into three long peninsulas extending in a southeasterly direction to Chesapeake Bay.

The first Forest Survey of Virginia was made in 1940. In the spring of 1956 a resurvey of the State was begun to obtain up-to-date statistics on forest area, timber volume, growth, and amount of timber cut. This is the first of three progress reports to be issued before publication of a statistical report for the entire State; and it covers the Virginia Coastal Plain, which is designated as Survey Unit Number 1.

Comparison of the results of the two surveys is made in the following pages to point out changes and trends that have taken place in the 16-year interval. In order to permit true comparisons, the 1940 data were examined carefully and adjustments were made to eliminate differences resulting from changes in standards and definitions.

Area estimates of forest and other land use classes were based on examination of 46,000 points systematically spaced on aerial photographs. Subsamples of 1,386 photo points classified as forest and 383 classified as nonforest were visited on the ground. Data from these field sample plots were used to adjust for changes in land use since date of photography, as well as to provide detailed information on forest conditions.

PRESENT CONDITION AND RECENT TRENDS

Small increase in forest land area.--The 1956 Survey shows that 4.1 million acres or 65 percent of the land in the Coastal Plain is forested (table 1). This is an increase of 4.4 percent or 172,000 acres since 1940. All but 49,000 acres or 99 percent of the total forest area is suitable and available for timber production. The 49,000 acres of unproductive forest land and productive public forest land withdrawn from timber production is about double the area reported in 1940. This increase results mainly from use of forest land in defense installations for target impact areas and other uses that render the timber unsuitable or the areas unsafe for timber harvest operations.

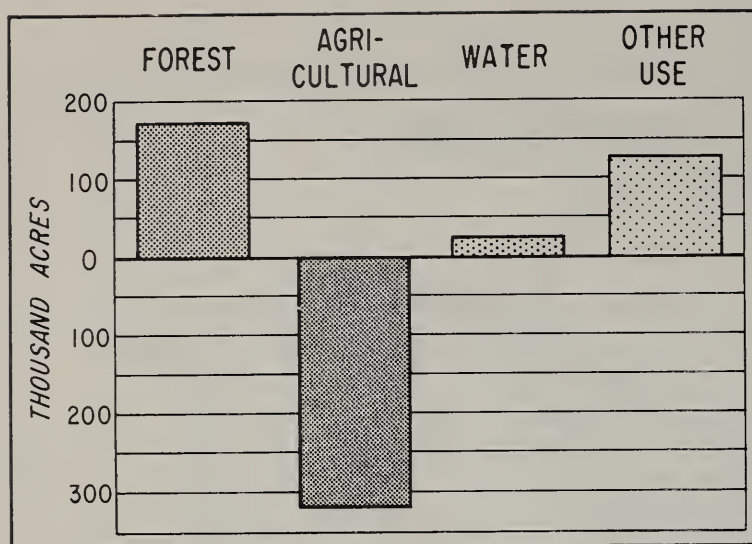


Figure 2.--Change in land use, 1940 to 1956.

Forest land predominately in farm ownership.--Sixty-nine percent of the commercial forest land in the Virginia Coastal Plain was on farms (fig. 3). Nineteen percent was owned by pulp and paper companies, sawmills, and other wood-using industries, and nine percent was in other private ownerships. Federal, state, county, and municipal

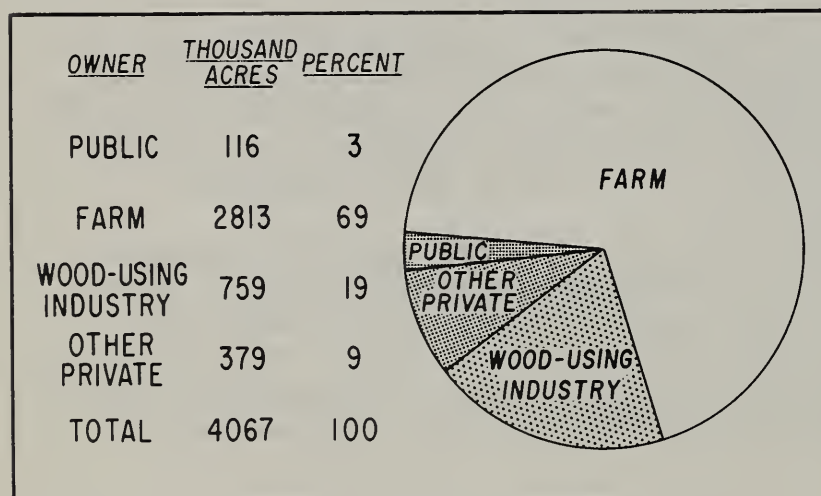


Figure 3.--Ownership of commercial forest land, 1956.

Agricultural land, including land in cultivation, pasture, and idle or resting cropland, has been reduced 17 percent in the past 16 years. About half of this reduction in agricultural land reverted to forest, 7 percent was covered by small bodies of water, and 40 percent was utilized in expanded urban areas, suburban developments, roads, airports, and other nonforest and nonagricultural uses (fig. 2).

ownership accounted for the other three percent. Forest land ownership estimates were based primarily upon classification of each of the 1,370 ground sample plots established on forest land. The only exception was that of public ownership, which received a 100-percent canvass to determine acreages and policy on timber production.

Area of forest owned by wood-using industries has increased 51 percent since 1940. Farm and other private ownership figures for the 1940 and 1956 Forest Surveys cannot be compared because of differences in sources of data and in definitions used. An analysis of Census of Agriculture figures shows a 6.5-percent reduction in farm woodland area between 1939 and 1954.

Area of pine types decreased 8 percent.--Comparisons made using the 1940 forest type definitions show a drop of 185,000 acres or 8 percent in pine and mixed pine-hardwood types during the period between surveys. This trend to hardwood types resulted partly from the

preferred use of the pines, and also from the steady buildup of hardwood stocking in all tree-size classes. The increased proportion of hardwoods in forest stands would cause some shifts from pine to hardwood forest types even in stands where the pine component remained unchanged. Pine type area decreases were 124,000 acres for loblolly pine, 34,000 acres for Virginia pine, and 27,000 acres for shortleaf pine (fig. 4). Since 1940 the proportion of pine types has dropped from 62 percent to 55 percent of the commercial forest area in the Coastal Plain.

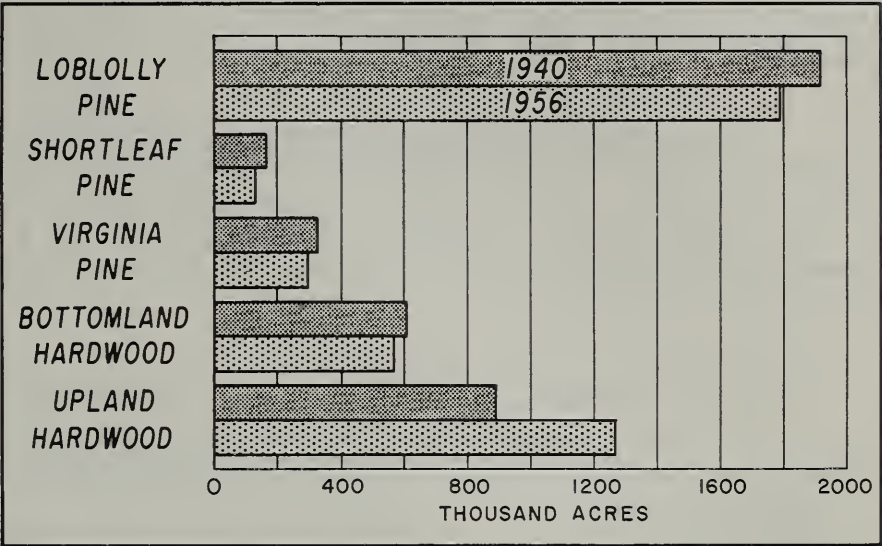


Figure 4.--Comparison of the 1940 and 1956 commercial forest area by forest type. Pine-hardwood types are included with the pine types.

Pine sawtimber volume holding steady.--The board-foot volume of pine timber dropped only 2 percent in the past 16 years (table A), but there is now a larger proportion of the volume in the smaller trees. The volume in pines 15.0 inches d.b.h. or larger dropped 17 percent, as compared to an increase of 7 percent in the smaller sawtimber trees.

Table A.--Comparison of sawtimber volumes, 1940 and 1956

Species group	1940 ^{1/}	1956	Change	
	Million bd.-ft.	Million bd.-ft.	Million bd.-ft.	Percent
Yellow pines	7,536	7,398	-138	-2
Other softwoods	337	255	-82	-24
Soft hardwoods	2,936	3,182	+246	+8
Hard hardwoods	2,671	4,265	+1,594	+60
All species	13,480	15,100	+1,620	+12

^{1/} Original survey volumes have been recomputed to eliminate differences resulting from changes in standards between the two surveys. Thus, the 1940 estimate shown here will not agree with volumes previously published.

During the period between Forest Surveys, hardwood sawtimber volumes increased in all sizes for an overall rise of 33 percent. A closer examination reveals that the volume of the more preferred soft hardwood group dropped more than one-third in the diameters above 20 inches, while hard hardwoods of similar size increased sharply.

Total growing stock increased 14 percent.--Cubic-foot volume of sound trees 5.0 inches d.b.h. or larger increased 14 percent since 1940 (table B). Pines remained constant, while the small component of cedar and cypress dropped 28 percent, netting a one-percent decrease for all softwoods. Hardwood cubic volume jumped 33 percent during the 16 years.

Table B.--Comparison of volumes in all trees 5.0 inches d.b.h. or larger, 1940 and 1956

Class of material and species group	1940 ^{1/}	1956	Change	
	<u>Million cu. ft.</u>	<u>Million cu. ft.</u>	<u>Million cu. ft.</u>	<u>Percent</u>
Growing stock:				
Yellow pines	2,180	2,185	+5	(2/)
Other softwoods	75	54	-21	-28
Soft hardwoods	918	1,076	+158	+17
Hard hardwoods	959	1,414	+455	+47
All species	4,132	4,729	+597	+14
Cull trees:				
Softwoods	63	71	+8	+13
Hardwoods	360	323	-37	-10
All species	423	394	-29	-7
All live trees	4,555	5,123	+568	+12

^{1/} See footnote 1, table A.

^{2/} Less than 0.5 percent change.

As shown in figure 5, hardwood growing stock volume made a spectacular increase in the smaller diameters, but changed little

in the large diameters. A slight gain in the volume of smaller softwood trees was about balanced by a drop in the volume of larger trees.

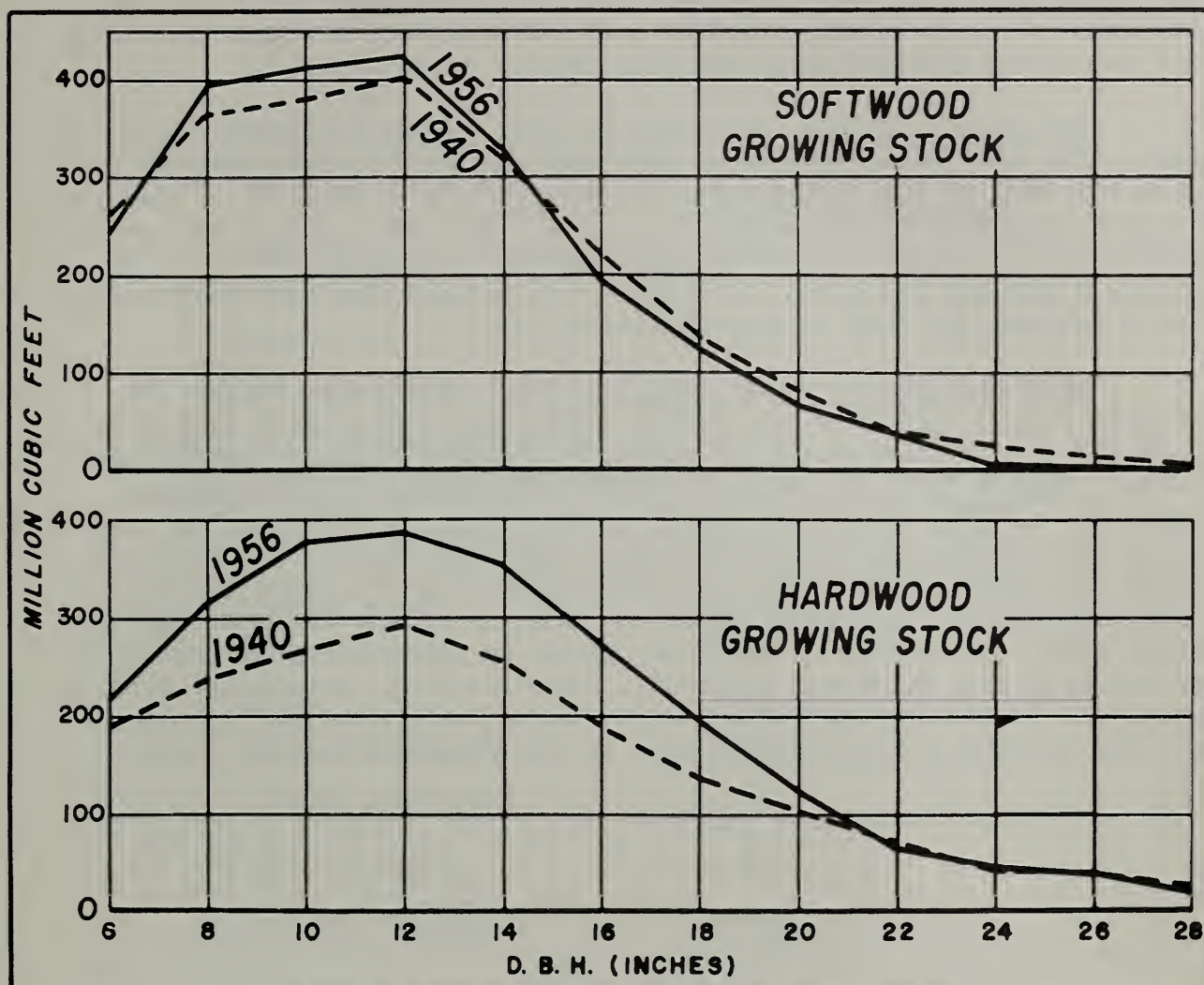


Figure 5.--Comparison of 1940 and 1956 growing stock volume by tree diameter.

A start has been made in reducing cull-tree volume.--Cubic volume of cull trees has dropped 7 percent since 1940, as indicated in table B. The decrease is in the hardwoods and is greatest in the smaller diameters. It seems probable that the recent widespread cultural operations on larger private holdings have already created a measurable effect. Pulp and paper companies and a few other large forest owners have cut, bulldozed, girdled, or poisoned large areas of inferior hardwoods in an effort to reestablish pine stands either through planting or natural reseedling.

In spite of the small decrease in cull volume, about 8 percent of the total cubic volume is still in cull trees. About nine-tenths of this volume is in trees classified as sound culls. These trees are considered unsuitable for saw logs, mainly because of roughness, but much of their volume could be used for pulpwood or other products not requiring straight or clear sections.

Net growth of pine sawtimber is over one-half billion board-feet.--The net annual growth of sawtimber in the Virginia Coastal Plain was estimated at 836 million board-feet for 1956 (table 18). Pine accounted for 514 million board-feet, or a little over 60 percent of the total. The rate of net growth on sawtimber was about 7 percent for pines, 2 percent for other softwoods, 4.5 percent for soft hardwoods, and 4 percent for hard hardwoods (table 19).

Hard hardwood increase held in check.--Sawtimber volume increased during 1956 in each species group except the hard hardwoods (table 21). In that category, timber cut almost equaled growth, and volume dropped in the amount of natural mortality. Total growing stock in each species group also increased but, here again, hard hardwoods were at the bottom of the list. This seems odd in view of the large increases in hard hardwood volume and area of upland hardwood type since 1940. The explanation is found in recent cultural operations aimed at reestablishing pine stands in areas occupied partially or entirely by low-value hardwoods. These cutting, poisoning, girdling, and bulldozing operations were started only recently but have already covered a considerable area in the Virginia Coastal Plain.

Table 1.--Gross area^{1/} by broad use class, 1956

Class of use	Area	
	<u>Thousand acres</u>	<u>Percent</u>
Forest land:		
Commercial	4,067.1	59.2
Noncommercial:		
Productive-reserved	15.5	0.2
Unproductive	33.4	0.5
Total forest	4,116.0	59.9
Nonforest land:		
Agriculture	1,597.8	23.3
Marsh	229.5	3.3
Urban and other ^{2/}	345.4	5.0
Total nonforest	2,172.7	31.6
Total land area	6,288.7	91.5
Total water area ^{3/}	580.4	8.5
All classes	6,869.1	100.0

^{1/} From U. S. Bureau of the Census, 1950.

^{2/} Includes urban, suburban residential, and rural industrial areas, rights-of-way, cemeteries, schools, etc.

^{3/} Includes 503,800 acres of Census water reported in 1950 or created since that date and 76,600 acres of water according to Survey standards but defined by the Bureau of Census as land area. The Census water area was adjusted to exclude 3,200 acres classified as land by the Forest Survey.

Table 2.--Ownership of commercial forest land, 1956

Class of ownership	Commercial forest land	
	<u>Thousand acres</u>	<u>Percent</u>
Public land:		
National forest	--	--
Indian	--	--
Other Federal	87.0	2.2
Total Federal	87.0	2.2
State	16.2	0.4
County and municipal	12.8	0.3
Total public	116.0	2.9
Private land:		
Farm	2,813.2	69.2
Wood-using industries	758.6	18.6
Other	379.3	9.3
Total private	3,951.1	97.1
All classes	4,067.1	100.0

Table 3.--Commercial forest area by forest type and stand-size class, 1956

(In thousand acres)

Forest type ^{1/}	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Softwood types:						
Loblolly pine ^{2/}	228.6	793.1	414.4	90.6	20.0	1,546.7
Shortleaf pine	14.9	53.8	37.8	3.7	--	110.2
Virginia pine	7.3	70.4	102.7	17.6	--	198.0
Total	250.8	917.3	554.9	111.9	20.0	1,854.9
Hardwood types:						
Oak-pine	86.0	207.8	128.0	39.4	3.0	464.2
Oak-hickory	341.0	371.8	390.2	81.0	16.7	1,200.7
Oak-gum-cypress	247.3	145.2	96.6	46.1	12.1	547.3
Total	674.3	724.8	614.8	166.5	31.8	2,212.2
All types	925.1	1,642.1	1,169.7	278.4	51.8	4,067.1
Percent	22.7	40.4	28.8	6.8	1.3	100.0

^{1/} See description of forest type and stand-size classes under "Definition of Terms."

^{2/} Includes 22,100 acres of pond pine type.

Table 4.--Net volume^{1/} of sawtimber by species and stand-size class, 1956

(In million board-feet)

Species ^{2/}	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Softwoods:						
Loblolly pine ^{3/}	1,720.9	4,327.0	279.1	17.8	6.8	6,351.6
Shortleaf pine	120.4	420.3	38.6	2.7	--	582.0
Virginia pine	69.7	334.5	58.7	--	1.3	464.2
Total	1,911.0	5,081.8	376.4	20.5	8.1	7,397.8
Cypress	180.7	46.3	1.1	--	--	228.1
Redcedar	6.5	10.2	2.1	--	--	18.8
Whitecedar	--	8.6	--	--	--	8.6
Total sftwds.	2,098.2	5,146.9	379.6	20.5	8.1	7,653.3
Hardwoods:						
Blackgum	513.1	201.2	26.9	0.8	--	742.0
Sweetgum	623.3	403.0	59.4	11.6	2.1	1,099.4
Yellow-poplar	333.4	258.4	55.4	2.1	4.4	653.7
Soft maple	321.3	147.5	10.2	1.6	--	480.6
Other soft hwdws.	163.7	35.4	6.3	--	0.6	206.0
Total	1,954.8	1,045.5	158.2	16.1	7.1	3,181.7
White & swamp chestnut oaks	476.3	529.4	87.2	1.9	1.0	1,095.8
Other white oaks	100.9	98.8	11.2	--	--	210.9
No. red & swamp red oaks	168.2	116.1	9.4	--	--	293.7
Other red oaks	759.8	579.7	130.8	4.8	--	1,475.1
Hickory	275.5	212.4	42.3	1.7	--	531.9
Ash	63.1	35.9	3.4	--	--	102.4
Beech	303.9	65.6	21.2	--	--	390.7
Other hard hwdws.	104.8	46.8	10.7	0.3	1.8	164.4
Total	2,252.5	1,684.7	316.2	8.7	2.8	4,264.9
Total hwdws.	4,207.3	2,730.2	474.4	24.8	9.9	7,446.6
All species	6,305.5	7,877.1	854.0	45.3	18.0	15,099.9
Percent	41.8	52.2	5.6	0.3	0.1	100.0

^{1/} Log scale, International 1/4-inch rule.^{2/} See "Definition of Terms" for species combined with others.^{3/} Includes 73.2 million board-feet of pond pine.

Table 5.--Net volume^{1/} of sawtimber by species and diameter class, 1956

Species	10-12 inches ^{2/}	14-18 inches	20-24 inches	26+ inches	All diameters	
	<u>Million</u> <u>bd.-ft.</u>	<u>Million</u> <u>bd.-ft.</u>	<u>Million</u> <u>bd.-ft.</u>	<u>Million</u> <u>bd.-ft.</u>	<u>Million</u> <u>bd.-ft.</u>	<u>Percent</u>
Softwoods:						
Loblolly pine	2,934.5	2,825.7	557.4	34.0	6,351.6	42.1
Shortleaf pine	378.6	187.0	16.4	--	582.0	3.8
Virginia pine	310.5	144.4	9.3	--	464.2	3.1
Total	3,623.6	3,157.1	583.1	34.0	7,397.8	49.0
Cypress	51.8	117.5	29.8	29.0	228.1	1.5
Redcedar	10.0	5.7	3.1	--	18.8	0.1
Whitecedar	1.4	7.2	--	--	8.6	0.1
Total sftwds.	3,686.8	3,287.5	616.0	63.0	7,653.3	50.7
Hardwoods:						
Blackgum	159.9	429.3	102.1	50.7	742.0	4.9
Sweetgum	296.3	629.0	159.4	14.7	1,099.4	7.3
Yellow-poplar	138.5	371.7	95.3	48.2	653.7	4.3
Soft maple	94.8	259.5	106.9	19.4	480.6	3.2
Other soft hwdws.	34.7	93.1	51.8	26.4	206.0	1.4
Total	724.2	1,782.6	515.5	159.4	3,181.7	21.1
White & swamp chestnut oaks	318.4	572.7	142.9	61.8	1,095.8	7.2
Other white oaks	55.8	76.4	32.3	46.4	210.9	1.4
No. red & swamp red oaks	46.0	141.7	36.6	69.4	293.7	1.9
Other red oaks	260.2	722.6	224.2	268.1	1,475.1	9.8
Hickory	86.7	270.3	96.9	78.0	531.9	3.5
Ash	25.7	62.7	14.0	--	102.4	0.7
Beech	38.8	196.1	91.3	64.5	390.7	2.6
Other hard hwdws.	43.4	62.7	50.8	7.5	164.4	1.1
Total	875.0	2,105.2	689.0	595.7	4,264.9	28.2
Total hwdws.	1,599.2	3,887.8	1,204.5	755.1	7,446.6	49.3
All species	5,286.0	7,175.3	1,820.5	818.1	15,099.9	100.0
Percent	35.0	47.5	12.1	5.4	100.0	--

^{1/} Log scale, International 1/4-inch rule.

^{2/} Ten-inch hardwoods are not included since they are below sawtimber size.

Table 6.--Net volume^{1/} of sawtimber by forest type and stand-size class, 1956

(In million board-feet)

Forest type	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Softwood types:						
Loblolly pine	1,659.8	4,602.3	254.1	13.0	7.4	6,536.6
Shortleaf pine	100.9	285.5	22.0	--	--	408.4
Virginia pine	39.1	275.2	62.6	--	--	376.9
Total	1,799.8	5,163.0	338.7	13.0	7.4	7,321.9
Hardwood types:						
Oak-pine	596.0	779.0	91.9	10.0	--	1,476.9
Oak-hickory	2,128.5	1,330.6	359.6	17.1	6.8	3,842.6
Oak-gum-cypress	1,781.2	604.5	63.8	5.2	3.8	2,458.5
Total	4,505.7	2,714.1	515.3	32.3	10.6	7,778.0
All types	6,305.5	7,877.1	854.0	45.3	18.0	15,099.9
Percent	41.8	52.2	5.6	0.3	0.1	100.0

^{1/} Log scale, International 1/4-inch rule.

Table 7.--Net volume of sawtimber by species group, log grade, and
tree-size class, 1956

PINE						
Log grade	10 - 14 inches ^{1/}		16+ inches		All trees	
	<u>Million</u> <u>bd.-ft.</u>	<u>Percent</u>	<u>Million</u> <u>bd.-ft.</u>	<u>Percent</u>	<u>Million</u> <u>bd.-ft.</u>	<u>Percent</u>
Grade 1	--	--	89.6	4.1	89.6	1.2
Grade 2	1,125.7	21.6	883.2	40.4	2,008.9	27.2
Grade 3	2,949.8	56.6	741.1	33.9	3,690.9	49.9
Grade 4	1,136.2	21.8	472.2	21.6	1,608.4	21.7
Total	5,211.7	100.0	2,186.1	100.0	7,397.8	100.0

OTHER SOFTWOODS						
Grade 1	--	--	24.4	16.7	24.4	9.6
Grade 2	65.3	59.6	92.4	63.3	157.7	61.7
Grade 3	44.2	40.4	10.2	7.0	54.4	21.3
Grade 4	--	--	19.0	13.0	19.0	7.4
Total	109.5	100.0	146.0	100.0	255.5	100.0

SOFT HARDWOODS						
Grade 1	--	--	436.5	24.7	436.5	13.7
Grade 2	161.3	11.4	448.8	25.4	610.1	19.2
Grade 3	686.1	48.5	567.2	32.1	1,253.3	39.4
Grade 4	567.3	40.1	314.5	17.8	881.8	27.7
Total	1,414.7	100.0	1,767.0	100.0	3,181.7	100.0

HARD HARDWOODS						
Grade 1	--	--	335.3	13.6	335.3	7.9
Grade 2	30.6	1.7	530.0	21.5	560.6	13.1
Grade 3	315.0	17.5	621.2	25.2	936.2	22.0
Grade 4	1,454.2	80.8	978.6	39.7	2,432.8	57.0
Total	1,799.8	100.0	2,465.1	100.0	4,264.9	100.0

^{1/} Ten-inch hardwoods not included since they are below sawtimber size.

Table 8.--Net volume^{1/} of all timber by species and stand-size class, 1956

(In thousand cords)

GROWING STOCK

Species	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Softwoods:						
Loblolly pine ^{2/}	4,523	15,758	3,687	109	27	24,104
Shortleaf pine	408	1,780	522	6	--	2,716
Virginia pine	216	1,715	1,075	4	4	3,014
Total	5,147	19,253	5,284	119	31	29,834
Cypress	386	147	3	--	--	536
Redcedar	27	35	6	--	--	68
Whitecedar	--	18	7	--	--	25
Total sftwds.	5,560	19,453	5,300	119	31	30,463
Hardwoods:						
Blackgum	1,922	1,206	185	13	--	3,326
Sweetgum	2,288	2,355	771	42	6	5,462
Yellow-poplar	953	1,065	476	6	12	2,512
Soft maple	1,324	852	212	21	--	2,409
Other soft hwdws.	519	230	156	--	2	907
Total	7,006	5,708	1,800	82	20	14,616
White & swamp chestnut oaks	1,828	3,001	996	6	3	5,834
Other white oaks	271	529	150	--	6	956
No. red & swamp red oaks	468	430	144	--	--	1,042
Other red oaks	2,272	2,622	1,037	42	--	5,973
Hickory	844	1,013	211	4	--	2,072
Ash	288	158	49	--	--	495
Beech	883	390	132	--	7	1,412
Dogwood, holly	162	231	84	1	--	478
Other hard hwdws.	388	227	204	--	13	832
Total	7,404	8,601	3,007	53	29	19,094
Total hwdws.	14,410	14,309	4,807	135	49	33,710
All species	19,970	33,762	10,107	254	80	64,173
Percent	31.1	52.6	15.8	0.4	0.1	100.0

OTHER MATERIAL

Sound culls:						
Softwoods	188	390	302	46	3	929
Hardwoods	1,456	1,467	880	125	99	4,027
Rotten culls	193	160	63	20	--	436
Total other material	1,837	2,017	1,245	191	102	5,392

^{1/} Sound wood and bark.^{2/} Includes 192,000 cords of pond pine.

Table 9.--Net volume^{1/} of all timber by species and diameter class, 1956

(In thousand cords)

GROWING STOCK

Species	Diameter class						All diameters
	6 inches	8 inches	10 inches	12 inches	14-18 inches	20+ inches	
Softwoods:							
Loblolly pine	2,972	4,197	4,142	4,587	6,910	1,296	24,104
Shortleaf pine	446	690	630	489	427	34	2,716
Virginia pine	685	910	682	347	369	21	3,014
Total	4,103	5,797	5,454	5,423	7,706	1,351	29,834
Cypress	--	59	56	78	240	103	536
Redcedar	10	12	10	16	13	7	68
Whitecedar	7	--	--	3	15	--	25
Total sftwds.	4,120	5,868	5,520	5,520	7,974	1,461	30,463
Hardwoods:							
Blackgum	301	460	544	521	1,160	340	3,326
Sweetgum	597	980	1,000	891	1,603	391	5,462
Yellow-poplar	241	327	268	412	947	317	2,512
Soft maple	372	380	317	303	730	307	2,409
Other soft hwdws.	128	137	122	108	241	171	907
Total	1,639	2,284	2,251	2,235	4,681	1,526	14,616
White & swamp chestnut oaks	763	854	1,112	1,014	1,582	509	5,834
Other white oaks	106	131	129	180	215	195	956
No. red & swamp red oaks	34	151	99	144	378	236	1,042
Other red oaks	555	674	894	799	1,893	1,158	5,973
Hickory	196	266	203	277	728	402	2,072
Ash	85	48	91	80	160	31	495
Beech	112	70	198	121	544	367	1,412
Dogwood, holly	144	119	105	45	65	--	478
Other hard hwdws.	147	182	147	100	114	142	832
Total	2,142	2,495	2,978	2,760	5,679	3,040	19,094
Total hwdws.	3,781	4,779	5,229	4,995	10,360	4,566	33,710
All species	7,901	10,647	10,749	10,515	18,334	6,027	64,173
Percent	12.3	16.6	16.7	16.4	28.6	9.4	100.0

OTHER MATERIAL

Sound culls:							
Softwoods	146	164	186	175	162	96	929
Hardwoods	601	726	510	451	895	844	4,027
Rotten culls	47	64	62	18	69	176	436
Total other material	794	954	758	644	1,126	1,116	5,392

^{1/} Sound wood and bark.

Table 10.--Net volume^{1/} of all timber by species and class of material, 1956

(In thousand cords)

Species	Growing stock				Other material	
	Sawtimber trees		Pole-timber trees	Total sound trees	Sound culls	Rotten culls
	Saw-log portion	Upper stems				
Softwoods:						
Loblolly pine	13,670	3,265	7,169	24,104	424	34
Shortleaf pine	1,239	341	1,136	2,716	14	--
Virginia pine	1,070	349	1,595	3,014	417	3
Total	15,979	3,955	9,900	29,834	855	37
Cypress	390	87	59	536	74	21
Redcedar	37	9	22	68	--	--
Whitecedar	15	3	7	25	--	--
Total sftwds.	16,421	4,054	9,988	30,463	929	58
Hardwoods:						
Blackgum	1,522	499	1,305	3,326	657	78
Sweetgum	2,280	605	2,577	5,462	387	50
Yellow-poplar	1,343	333	836	2,512	128	30
Soft maple	976	364	1,069	2,409	772	66
Other soft hdwds.	414	106	387	907	115	2
Total	6,535	1,907	6,174	14,616	2,059	226
White & swamp chestnut oaks	2,188	917	2,729	5,834	347	33
Other white oaks	401	189	366	956	219	10
No. red & swamp red oaks	585	173	284	1,042	44	--
Other red oaks	2,923	927	2,123	5,973	349	30
Hickory	1,079	328	665	2,072	115	15
Ash	221	50	224	495	73	14
Beech	762	270	380	1,412	295	23
Dogwood, holly	78	32	368	478	93	--
Scrub oak ^{2/}	--	--	--	--	254	2
Other hard hdwds.	268	88	476	832	179	25
Total	8,505	2,974	7,615	19,094	1,968	152
Total hdwds.	15,040	4,881	13,789	33,710	4,027	378
All species	31,461	8,935	23,777	64,173	4,956	436
Percent	49.0	13.9	37.1	100.0	91.9	8.1

^{1/} Sound wood and bark.^{2/} Includes noncommercial species.

Table 11.--Net volume^{1/} of all timber by forest type and stand-size class, 1956

(In thousand cords)

GROWING STOCK						
Forest type	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Seedling & sapling stands	Poorly stocked stands & unstocked areas	All stands
Softwood types:						
Loblolly pine	5,071	18,352	3,881	72	35	27,411
Shortleaf pine	337	1,195	305	--	--	1,837
Virginia pine	129	1,478	1,208	26	--	2,841
Total	5,537	21,025	5,394	98	35	32,089
Hardwood types:						
Oak-pine	1,869	3,559	822	50	--	6,300
Oak-hickory	6,692	6,371	2,981	68	27	16,139
Oak-gum-cypress	5,872	2,807	910	38	18	9,645
Total	14,433	12,737	4,713	156	45	32,084
All types	19,970	33,762	10,107	254	80	64,173
Percent	31.1	52.6	15.8	0.4	0.1	100.0
OTHER MATERIAL						
Softwood types:						
Loblolly pine	299	606	313	56	3	1,277
Shortleaf pine	--	11	21	--	--	32
Virginia pine	14	110	112	6	--	242
Total	313	727	446	62	3	1,551
Hardwood types:						
Oak-pine	150	227	116	13	--	506
Oak-hickory	529	528	504	107	90	1,758
Oak-gum-cypress	845	535	179	9	9	1,577
Total	1,524	1,290	799	129	99	3,841
All types	1,837	2,017	1,245	191	102	5,392
Percent	34.1	37.4	23.1	3.5	1.9	100.0

^{1/} Sound wood and bark.

Table 12.--Net volume^{1/} of all timber by species and diameter class, 1956

(In million cubic feet)

GROWING STOCK

Species	Diameter class						All diameters
	6 inches	8 inches	10 inches	12 inches	14-18 inches	20+ inches	
Softwoods:							
Loblolly pine ^{2/}	175.5	279.7	316.5	352.0	556.6	109.1	1,789.4
Shortleaf pine	25.9	46.3	42.8	37.2	34.4	2.9	189.5
Virginia pine	41.3	61.5	46.3	26.0	29.2	1.7	206.0
Total	242.7	387.5	405.6	415.2	620.2	113.7	2,184.9
Cypress	--	4.3	4.0	6.7	21.1	10.0	46.1
Redcedar	0.7	0.9	0.8	1.3	1.2	0.6	5.5
Whitecedar	0.4	--	--	0.3	1.4	--	2.1
Total sftwds.	243.8	392.7	410.4	423.5	643.9	124.3	2,238.6
Hardwoods:							
Blackgum	17.1	30.5	39.3	41.3	92.7	28.2	249.1
Sweetgum	34.2	64.9	71.8	67.2	126.4	32.3	396.8
Yellow-poplar	14.1	21.8	19.3	31.4	74.4	26.4	187.4
Soft maple	21.0	25.2	22.8	23.3	57.8	25.2	175.3
Other soft hdwds.	7.5	9.1	8.7	8.4	19.3	14.3	67.3
Total	93.9	151.5	161.9	171.6	370.6	126.4	1,075.9
White & swamp chestnut oaks	43.5	56.1	80.1	78.3	124.8	42.0	424.8
Other white oaks	6.0	8.6	9.3	13.8	16.6	16.0	70.3
No. red & swamp red oaks	1.9	9.8	7.1	11.0	30.0	19.5	79.3
Other red oaks	32.1	44.2	64.6	63.0	149.3	95.9	449.1
Hickory	11.1	17.5	14.5	20.7	57.0	33.2	154.0
Ash	4.9	3.1	6.6	6.3	12.7	2.5	36.1
Beech	6.4	4.5	14.3	9.5	42.9	30.8	108.4
Dogwood, holly	8.5	7.7	7.6	3.2	5.0	--	32.0
Other hard hdwds.	8.6	12.0	10.6	8.0	9.2	11.7	60.1
Total	123.0	163.5	214.7	213.8	447.5	251.6	1,414.1
Total hdwds.	216.9	315.0	376.6	385.4	818.1	378.0	2,490.0
All species	460.7	707.7	787.0	808.9	1,462.0	502.3	4,728.6
Percent	9.7	15.0	16.7	17.1	30.9	10.6	100.0

OTHER MATERIAL

Sound culls:							
Softwoods	8.4	11.0	12.2	12.6	12.9	9.0	66.1
Hardwoods	34.3	48.0	36.7	34.9	71.6	70.1	295.6
Rotten culls	2.7	4.2	4.5	1.1	5.8	14.8	33.1
Total other material	45.4	63.2	53.4	48.6	90.3	93.9	394.8

^{1/} Excluding bark.^{2/} Includes 14.7 million cubic feet of pond pine.

Table 13.--Net volume^{1/} of all timber by species and class of material, 1956

(In million cubic feet)

Species	Growing stock				Other material	
	Sawtimber trees		Pole-timber trees	Total sound trees	Sound culls	Rotten culls
	Saw-log portion	Upper stems				
Softwoods:						
Loblolly pine	1,064.2	270.0	455.2	1,789.4	30.0	2.7
Shortleaf pine	98.1	19.2	72.2	189.5	0.8	--
Virginia pine	83.6	19.6	102.8	206.0	28.2	0.2
Total	1,245.9	308.8	630.2	2,184.9	59.0	2.9
Cypress	35.0	6.8	4.3	46.1	7.1	2.1
Redcedar	3.0	0.9	1.6	5.5	--	--
Whitecedar	1.4	0.3	0.4	2.1	--	--
Total sftwds.	1,285.3	316.8	636.5	2,238.6	66.1	5.0
Hardwoods:						
Blackgum	124.6	37.6	86.9	249.1	47.9	6.1
Sweetgum	185.0	40.9	170.9	396.8	28.1	3.7
Yellow-poplar	108.2	24.0	55.2	187.4	10.2	2.2
Soft maple	78.9	27.4	69.0	175.3	56.9	4.9
Other soft hdwds.	33.0	9.0	25.3	67.3	8.5	0.2
Total	529.7	138.9	407.3	1,075.9	151.6	17.1
White & swamp chestnut oaks	175.7	69.4	179.7	424.8	26.4	2.3
Other white oaks	33.2	13.2	23.9	70.3	16.7	0.8
No. red & swamp red oaks	46.9	13.6	18.8	79.3	3.3	--
Other red oaks	235.0	73.2	140.9	449.1	24.9	1.9
Hickory	85.5	25.4	43.1	154.0	8.7	1.4
Ash	17.4	4.1	14.6	36.1	5.4	0.9
Beech	62.2	21.0	25.2	108.4	23.3	1.6
Dogwood, holly	5.7	2.5	23.8	32.0	5.9	--
Scrub oak ^{2/}	--	--	--	--	17.3	0.2
Other hard hdwds.	21.5	7.4	31.2	60.1	12.1	1.9
Total	683.1	229.8	501.2	1,414.1	144.0	11.0
Total hdwds.	1,212.8	368.7	908.5	2,490.0	295.6	28.1
All species	2,498.1	685.5	1,545.0	4,728.6	361.7	33.1
Percent	52.8	14.5	32.7	100.0	91.6	8.4

^{1/} Excluding bark.

^{2/} Includes noncommercial species.

Table 14.--Average volume^{1/} per acre of sawtimber by forest type,
species group, and stand-size class, 1956

(In board-feet)

Forest type and species group	Large sawtimber stands	Small sawtimber stands	Pole- timber stands	Other stand sizes	All stands
Loblolly pine					
Softwood	6,079	5,275	536	156	3,758
Hardwood	1,182	528	78	29	468
Shortleaf pine					
Softwood	5,891	4,848	533	--	3,347
Hardwood	887	454	49	--	358
Virginia pine					
Softwood	4,176	3,020	523	--	1,500
Hardwood	1,116	889	87	--	403
Oak-pine					
Softwood	2,738	1,562	364	116	1,317
Hardwood	4,197	2,186	354	121	1,865
Oak-hickory					
Softwood	372	245	85	45	213
Hardwood	5,869	3,334	837	199	2,987
Oak-gum-cypress					
Softwood	921	507	42	36	562
Hardwood	6,283	3,657	618	119	3,931
All types					
Softwood	2,268	3,134	325	87	1,882
Hardwood	4,548	1,663	406	105	1,831

^{1/} Log scale, International 1/4-inch rule.

Table 15.--Average volume^{1/} per acre of all trees by forest type, species group, and stand-size class, 1956

(In standard cords)

Forest type and species group	Large sawtimber stands		Small sawtimber stands		Pole- timber stands		Other stand sizes		All stands	
	Sound trees	Cull trees	Sound trees	Cull trees	Sound trees	Cull trees	Sound trees	Cull trees	Sound trees	Cull trees
Loblolly pine										
Softwood	16.0	0.4	19.4	0.3	8.4	0.5	0.7	0.3	14.6	0.4
Hardwood	6.2	0.9	3.8	0.4	1.0	0.3	0.2	0.2	3.1	0.4
Shortleaf pine										
Softwood	18.6	--	18.5	0.1	6.6	0.4	--	--	13.8	0.2
Hardwood	4.1	--	3.7	0.1	1.5	0.2	--	--	2.8	0.1
Virginia pine										
Softwood	11.0	0.7	16.2	1.0	10.1	0.7	0.6	--	11.4	0.8
Hardwood	6.5	1.2	4.8	0.5	1.7	0.4	0.9	0.3	2.9	0.5
Oak-pine										
Softwood	6.9	0.1	6.1	0.1	2.3	(2/)	0.9	0.2	4.7	0.1
Hardwood	14.9	1.6	11.0	1.0	4.2	0.9	0.3	0.1	8.8	1.0
Oak-hickory										
Softwood	1.2	0.1	1.2	(2/)	0.6	(2/)	0.1	(2/)	0.9	(2/)
Hardwood	18.4	1.5	15.9	1.4	7.1	1.3	0.8	2.0	12.5	1.4
Oak-gum-cypress										
Softwood	2.2	0.4	1.5	0.1	0.4	--	0.2	--	1.5	0.2
Hardwood	21.6	3.0	17.8	3.6	9.0	1.9	0.8	0.3	16.1	2.7
All types										
Softwood	6.0	0.3	11.8	0.2	4.5	0.3	0.5	0.1	7.5	0.2
Hardwood	15.6	1.7	8.7	1.0	4.1	0.8	0.6	0.7	8.3	1.1

^{1/} Sound wood and bark.

^{2/} Less than 0.05 cord per acre.

Table 16.--Number of trees^{1/} by species group, quality class, and tree size, 1956

(In thousand trees)

Species group and quality class	Sapling-size trees	Pole-size trees	Small sawtimber trees	Large sawtimber trees	All trees
Yellow pines:					
Sound trees	426,181	187,980	74,935	8,576	697,672
Sound culls	29,848	8,886	3,070	356	42,160
Rotten culls	--	348	60	57	465
Total	456,029	197,214	78,065	8,989	740,297
Other softwoods:					
Sound trees	35,845	1,355	1,124	422	38,746
Sound culls	5,941	172	--	18	6,131
Rotten culls	--	--	--	18	18
Total	41,786	1,527	1,124	458	44,895
Soft hardwoods:					
Sound trees	574,297	92,195	17,228	7,728	691,448
Sound culls	191,182	19,484	2,772	1,439	214,877
Rotten culls	--	2,065	333	513	2,911
Total	765,479	113,744	20,333	9,680	909,236
Hard hardwoods:					
Sound trees	608,389	115,606	23,526	10,172	757,693
Sound culls	302,625	26,024	2,610	1,351	332,610
Rotten culls	--	2,083	169	306	2,558
Total	911,014	143,713	26,305	11,829	1,092,861
All species	2,174,308	456,198	125,827	30,956	2,787,289

^{1/} All trees 1.0 inch d.b.h. and larger.

Table 17.--Stocking on commercial forest land by forest type and tree-size class, 1956

(In thousand acres)

GROWING STOCK OF ALL SIZES

Forest type	Non-stocked 0-9%	Poor stocking 10-39%	Medium stocking 40-69%	Good stocking 70-100%	Total area
Loblolly pine	13.3	29.2	129.7	1,374.5	1,546.7
Shortleaf pine	--	3.7	7.4	99.1	110.2
Virginia pine	--	3.7	21.2	173.1	198.0
Oak-pine	3.0	14.2	42.8	404.2	464.2
Oak-hickory	8.6	74.6	252.9	864.6	1,200.7
Oak-gum-cypress	8.7	35.3	103.1	400.2	547.3
All types	33.6	160.7	557.1	3,315.7	4,067.1
Percent	0.8	4.0	13.7	81.5	100.0

SAWTIMBER GROWING STOCK

Loblolly pine	336.3	504.2	357.3	348.9	1,546.7
Shortleaf pine	24.2	47.2	15.0	23.8	110.2
Virginia pine	67.2	90.8	36.2	3.8	198.0
Oak-pine	105.5	202.3	122.9	33.5	464.2
Oak-hickory	271.8	602.8	242.0	84.1	1,200.7
Oak-gum-cypress	101.8	210.6	126.9	108.0	547.3
All types	906.8	1,657.9	900.3	602.1	4,067.1
Percent	22.3	40.8	22.1	14.8	100.0

Table 18.--Net annual growth by species group and unit of measure, 1956

Species group	Sawtimber	Growing stock	
	<u>Million bd.-ft.</u>	<u>Million cu. ft.</u>	<u>Thousand cords</u>
Yellow pines	513.6	128.6	1,904
Other softwoods	4.6	0.9	13
Soft hardwoods	142.7	45.9	673
Hard hardwoods	174.9	52.2	761
All species	835.8	227.6	3,351

Table 19.--Net annual growth percentages for each species group and unit of measure, 1956

Unit of measure	Yellow pines	Other softwoods	Soft hardwoods	Hard hardwoods	All species
Board-feet	6.94	1.79	4.48	4.10	5.54
Cubic feet	5.88	1.76	4.27	3.69	4.81
Standard cords	6.38	2.07	4.60	3.99	5.22

Table 20.--Average annual timber cut by tree-size class and species group

SAWTIMBER (In million board-feet)

Tree-size class	Softwoods		Soft hardwoods	Hard hardwoods	All species
	Pine	Other			
Small sawtimber	268.7	--	18.1	53.1	339.9
Large sawtimber	189.2	2.8	62.0	144.3	398.3
All trees	457.9	2.8	80.1	197.4	738.2

GROWING STOCK (In thousand cords)

Pole trees	347	1	58	78	484
Small sawtimber	800	--	61	169	1,030
Large sawtimber	410	5	149	354	918
All trees	1,557	6	268	601	2,432

GROWING STOCK (In million cubic feet)

Pole trees	18.6	0.1	3.6	4.8	27.1
Small sawtimber	59.2	--	4.6	12.9	76.7
Large sawtimber	34.3	0.4	12.2	28.9	75.8
All trees	112.1	0.5	20.4	46.6	179.6

Table 21.--Net annual change in volume by species group, 1956

SAWTIMBER (In million board-feet)

Item	Yellow pines	Other softwoods	Soft hardwoods	Hard hardwoods	All species
Net volume, Jan. 1, 1956	7,397.8	255.5	3,181.7	4,264.9	15,099.9
Total growth	558.0	6.1	157.6	198.4	920.1
Mortality	44.4	1.5	14.9	23.5	84.3
Net growth	513.6	4.6	142.7	174.9	835.8
Timber cut	457.9	2.8	80.1	197.4	738.2
Loss or gain	+55.7	+1.8	+62.6	-22.5	+97.6
Net volume, Dec. 31, 1956	7,453.5	257.3	3,244.3	4,242.4	15,197.5
Percent change	+0.8	+0.7	+2.0	-0.5	+0.6

GROWING STOCK (In thousand cords)

Net volume, Jan. 1, 1956	29,834	629	14,616	19,094	64,173
Total growth	2,112	17	747	849	3,725
Mortality	208	4	74	88	374
Net growth	1,904	13	673	761	3,351
Timber cut	1,557	6	268	601	2,432
Loss or gain	+347	+7	+405	+160	+919
Net volume, Dec. 31, 1956	30,181	636	15,021	19,254	65,092
Percent change	+1.2	+1.1	+2.8	+0.8	+1.4

GROWING STOCK (In million cubic feet)

Net volume, Jan. 1, 1956	2,184.9	53.7	1,075.9	1,414.1	4,728.6
Total growth	143.7	1.2	51.3	58.9	255.1
Mortality	15.1	0.3	5.4	6.7	27.5
Net growth	128.6	0.9	45.9	52.2	227.6
Timber cut	112.1	0.5	20.4	46.6	179.6
Loss or gain	+16.5	+0.4	+25.5	+5.6	+48.0
Net volume, Dec. 31, 1956	2,201.4	54.1	1,101.4	1,419.7	4,776.6
Percent change	+0.8	+0.7	+2.4	+0.4	+1.0

Table 22.--Average annual change in volume per acre by stand size and forest type, 1956

Stand size and forest type	Sawtimber (in board-feet)				Growing stock (in standard cords)			
	Growth	Mortality	Timber cut ^{1/}	Net change	Growth	Mortality	Timber cut ^{1/}	Net change
Sawtimber stands								
Yellow pine	421	25	356	40	1.30	0.13	1.17	0.00
Oak-pine	257	38	253	-34	.90	.11	.74	.05
Oak-hickory	223	43	201	-21	.74	.15	.54	.05
Oak-gum-cypress	233	36	53	144	.83	.12	.12	.59
All types	319	33	255	31	1.03	.13	.78	.12
Poletimber stands								
Yellow pine	81	3	15	63	1.22	.03	.20	.99
Oak-pine	90	25	--	65	.58	.07	--	.51
Oak-hickory	76	7	21	48	.48	.04	.08	.36
Oak-gum-cypress	80	16	--	64	.80	.10	--	.70
All types	80	9	14	57	.87	.05	.12	.70
Other stands								
Yellow pine	9	15	7	-13	.08	.06	.02	.00
Oak-pine	13	10	--	3	.13	.03	--	.10
Oak-hickory	9	4	--	5	.06	.06	--	.00
Oak-gum-cypress	8	9	--	-1	.13	.06	--	.07
All types	9	10	3	-4	.09	.05	.01	.03
All stands								
Yellow pine	290	16	229	45	1.19	.08	.79	.32
Oak-pine	189	26	160	3	.74	.08	.47	.19
Oak-hickory	158	22	126	10	.60	.09	.35	.16
Oak-gum-cypress	182	25	38	119	.75	.10	.09	.56
All types	225	21	165	39	.91	.09	.53	.29

^{1/} Excludes timber removed in clearing land.

Table 23.--County area by broad use class, 1956

County	Total area ^{1/}	Nonforest area		Forest land		
		Land	Water	Non- commercial	Commercial	
	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Percent</u>
Accomack	385.3	179.5	94.5	(2/)	111.3	38.3
Brunswick	370.6	103.1	0.7	--	266.8	72.1
Caroline	351.4	74.1	3.5	25.0	248.8	71.5
Charles City	130.6	29.1	14.2	--	87.3	75.0
Chesterfield	303.4	67.9	8.1	2.0	225.4	76.3
Dinwiddie	324.5	91.6	0.3	4.6	228.0	70.3
Essex	169.0	53.5	10.0	--	105.5	66.4
Gloucester	164.5	44.1	24.3	(2/)	96.1	68.5
Greensville	193.3	52.7	1.2	(2/)	139.4	72.6
Hanover	301.4	91.3	0.5	0.2	209.4	69.6
Henrico	149.8	67.8	2.6	0.5	78.9	53.6
Isle of Wight	230.4	84.3	26.7	0.2	119.2	58.5
James City	116.5	26.6	22.3	1.8	65.8	69.9
King and Queen	209.3	46.2	6.7	--	156.4	77.2
King George	117.1	38.7	4.1	--	74.3	65.8
King Williams	183.0	44.7	7.0	--	131.3	74.6
Lancaster	97.9	32.0	9.5	--	56.4	63.8
Mathews	67.2	22.7	15.0	--	29.5	56.5
Middlesex	88.3	28.9	5.6	--	53.8	65.1
Nansemond	273.9	90.0	20.0	0.8	163.1	64.2
New Kent	141.4	25.7	6.5	--	109.2	80.9
Norfolk	254.7	87.1	26.9	0.2	140.5	61.7
Northampton	228.5	101.1	89.3	--	38.1	27.4
Northumberland	142.7	46.1	21.6	--	75.0	61.9
Prince George	190.7	53.8	13.7	4.6	118.6	67.0
Princess Anne	207.4	100.0	42.9	3.6	60.9	37.0
Richmond	129.9	45.0	8.1	--	76.8	63.1
Southampton	388.5	132.7	1.1	--	254.7	65.7
Surry	195.8	43.7	16.9	--	135.2	75.6
Sussex	317.4	66.7	0.6	--	250.1	78.9
Westmoreland	160.0	58.5	11.3	1.4	88.8	59.7
York ^{3/}	215.0	81.4	57.1	4.0	72.5	45.9
Unit total	6,799.4	2,110.6	572.8	48.9	4,067.1	65.3

^{1/} Gross area from Bureau of the Census, 1950.

^{2/} Less than 50 acres.

^{3/} Includes area in the independent cities Hampton and Warwick.

Table 24.--Ownership of commercial forest land by county, 1956

County	Private		Public					
			National forest	Other Federal	State	County, city, town	Total public	
	<u>Thousand acres</u>	<u>Percent</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Thousand acres</u>	<u>Percent</u>
Accomack	108.9	97.8	--	2.4	--	--	2.4	2.2
Brunswick	257.5	96.5	--	5.7	3.5	0.1	9.3	3.5
Caroline	210.7	84.7	--	37.7	0.1	0.3	38.1	15.3
Charles City	87.2	99.9	--	(1/)	--	0.1	0.1	0.1
Chesterfield	218.7	97.0	--	0.9	5.8	--	6.7	3.0
Dinwiddie	219.3	96.2	--	8.4	0.3	--	8.7	3.8
Essex	105.5	100.0	--	--	--	--	--	--
Gloucester	96.1	100.0	--	--	--	--	--	--
Greensville	139.3	99.9	--	--	0.1	--	0.1	0.1
Hanover	208.2	99.4	--	--	1.2	(1/)	1.2	0.6
Henrico	77.9	98.7	--	--	--	1.0	1.0	1.3
Isle of Wight	119.2	100.0	--	--	--	(1/)	(1/)	--
James City	64.0	97.3	--	1.0	0.7	0.1	1.8	2.7
King and Queen	156.0	99.7	--	--	--	0.4	0.4	0.3
King George	73.4	98.8	--	0.9	--	--	0.9	1.2
King William	130.7	99.5	--	--	0.6	--	0.6	0.5
Lancaster	56.4	100.0	--	--	--	--	--	--
Mathews	29.5	100.0	--	--	--	--	--	--
Middlesex	53.8	100.0	--	--	--	--	--	--
Nansemond	161.4	99.0	--	0.1	--	1.6	1.7	1.0
New Kent	108.4	99.3	--	--	0.8	--	0.8	0.7
Norfolk	136.7	97.3	--	3.8	--	--	3.8	2.7
Northampton	37.8	99.2	--	0.3	--	--	0.3	0.8
Northumberland	75.0	100.0	--	--	--	--	--	--
Prince George	115.5	97.4	--	3.1	--	--	3.1	2.6
Princess Anne	58.2	95.6	--	1.6	0.9	0.2	2.7	4.4
Richmond	76.8	100.0	--	--	--	--	--	--
Southampton	252.8	99.3	--	--	1.9	--	1.9	0.7
Surry	135.2	100.0	--	--	--	--	--	--
Sussex	249.7	99.8	--	--	0.3	0.1	0.4	0.2
Westmoreland	88.8	100.0	--	--	--	--	--	--
York	42.5	58.6	--	21.1	(1/)	8.9	30.0	41.4
Unit total	3,951.1	97.1	--	87.0	16.2	12.8	116.0	2.9

1/ Less than 50 acres.

Table 25.--Net volume^{1/} of sawtimber by county and species group, 1956

(In million board-feet)

County	Softwoods ^{2/}	Gum, yellow- poplar, and soft maple ^{3/}	Oaks and other hard hardwoods	All species
Accomack	228.2	59.9	8.8	296.9
Brunswick	413.7	105.8	105.2	624.7
Caroline	341.4	211.3	267.5	820.2
Charles City	245.3	38.2	108.5	392.0
Chesterfield	423.2	91.3	274.4	788.9
Dinwiddie	513.2	95.0	204.3	812.5
Essex	177.4	56.9	101.5	335.8
Gloucester	242.1	136.2	171.5	549.8
Greensville	254.1	112.1	150.2	516.4
Hanover	289.0	264.0	279.4	832.4
Henrico	59.1	53.7	90.0	202.8
Isle of Wight	341.2	95.8	179.6	616.6
James City	70.3	37.7	119.7	227.7
King and Queen	255.8	65.4	201.6	522.8
King George	54.5	48.4	107.7	210.6
King William	272.1	66.9	171.1	510.1
Lancaster	75.2	24.1	43.8	143.1
Mathews	63.2	22.6	15.7	101.5
Middlesex	81.5	47.7	50.2	179.4
Nansemond	305.2	311.5	133.2	749.9
New Kent	130.7	103.7	134.7	369.1
Norfolk	193.7	158.5	88.6	440.8
Northampton	152.0	8.4	17.2	177.6
Northumberland	118.9	29.5	60.1	208.5
Prince George	199.0	43.8	115.0	357.8
Princess Anne	78.2	60.3	42.3	180.8
Richmond	71.7	57.6	102.2	231.5
Southampton	707.9	352.3	263.3	1,323.5
Surry	330.5	83.3	137.9	551.7
Sussex	667.5	208.0	285.8	1,161.3
Westmoreland	81.5	41.7	119.7	242.9
York	216.0	90.1	114.2	420.3
Unit total	7,653.3	3,181.7	4,264.9	15,099.9

^{1/} Log scale, International 1/4-inch rule.^{2/} Includes cypress and cedar.^{3/} Includes other soft hardwoods.

Table 26.--Net volume^{1/} of sawtimber by county, broad species group,
and diameter group, 1956

(In million board-feet)

County	Softwoods			Hardwoods		
	9.0-14.9 inches	15.0-18.9 inches	19.0+ inches	11.0-14.9 inches	15.0-18.9 inches	19.0+ inches
Accomack	153.7	48.8	25.7	27.0	31.3	10.4
Brunswick	353.0	42.9	17.8	133.3	43.2	34.5
Caroline	253.2	82.0	6.2	209.5	134.5	134.8
Charles City	175.6	42.7	27.0	82.5	49.0	15.2
Chesterfield	262.5	78.0	82.7	177.6	93.7	94.4
Dinwiddie	360.9	120.8	31.5	165.0	86.0	48.3
Essex	118.1	53.8	5.5	85.2	51.0	22.2
Gloucester	143.8	64.8	33.5	96.6	90.2	120.9
Greensville	201.5	52.6	--	110.5	72.5	79.3
Hanover	259.9	21.8	7.3	162.9	168.1	212.4
Henrico	44.5	14.6	--	86.3	43.1	14.3
Isle of Wight	206.2	108.8	26.2	82.5	67.5	125.4
James City	47.3	12.8	10.2	76.6	63.1	17.7
King and Queen	211.0	38.1	6.7	117.2	101.9	47.9
King George	31.7	10.4	12.4	66.0	39.9	50.2
King William	192.7	33.1	46.3	98.7	80.2	59.1
Lancaster	56.8	15.3	3.1	38.7	21.7	7.5
Mathews	46.7	13.1	3.4	15.0	10.0	13.3
Middlesex	58.2	10.9	12.4	48.1	26.7	23.1
Nansemond	176.0	114.5	14.7	163.6	123.5	157.6
New Kent	107.3	23.4	--	103.1	72.8	62.5
Norfolk	127.2	59.2	7.3	131.1	68.7	47.3
Northampton	89.1	35.7	27.2	12.4	4.7	8.5
Northumberland	103.2	7.1	8.6	53.7	20.5	15.4
Prince George	137.6	30.2	31.2	97.8	50.1	10.9
Princess Anne	29.4	33.8	15.0	58.3	38.9	5.4
Richmond	46.5	12.4	12.8	73.7	50.0	36.1
Southampton	451.4	156.7	99.8	218.4	231.3	165.9
Surry	249.5	81.0	--	80.7	76.5	64.0
Sussex	435.3	170.7	61.5	217.1	146.4	130.3
Westmoreland	68.1	8.7	4.7	56.5	54.3	50.6
York	123.3	54.4	38.3	68.9	61.2	74.2
Unit total	5,321.2	1,653.1	679.0	3,214.5	2,272.5	1,959.6

^{1/} Log scale, International 1/4-inch rule.

Table 27.--Net volume^{1/} of all timber by county, species group, and diameter group,
1956

(In thousand cords)

GROWING STOCK

County	Yellow pines		Other softwoods		Soft hardwoods		Hard hardwoods		All species
	5 - 12 inches	13+ inches	5 - 12 inches	13+ inches	5 - 12 inches	13+ inches	5 - 12 inches	13+ inches	
Accomack	581	271	--	--	239	130	132	11	1,364
Brunswick	1,808	351	6	--	424	179	397	201	3,366
Caroline	1,034	427	2	--	244	439	644	540	3,330
Charles City	650	277	5	9	180	69	278	204	1,672
Chesterfield	1,102	599	--	8	433	144	870	549	3,705
Dinwiddie	1,304	664	22	--	393	179	774	438	3,774
Essex	527	221	--	--	135	110	293	192	1,478
Gloucester	572	356	--	--	222	285	248	384	2,067
Greensville	738	247	7	6	158	229	263	324	1,972
Hanover	1,571	160	4	--	457	573	452	589	3,806
Henrico	305	60	--	--	138	106	261	172	1,042
Isle of Wight	724	488	27	--	208	192	168	387	2,194
James City	184	72	--	7	127	79	297	249	1,015
King and Queen	1,072	241	--	--	439	102	418	413	2,685
King George	277	71	5	--	132	96	269	219	1,069
King William	725	343	4	--	191	131	425	367	2,186
Lancaster	323	72	--	--	95	44	176	67	777
Mathews	133	74	--	--	43	44	83	25	402
Middlesex	244	71	4	24	121	84	161	101	810
Nansemond	389	476	29	35	705	608	270	283	2,795
New Kent	436	114	--	--	149	203	251	243	1,396
Norfolk	279	264	3	21	454	293	137	177	1,628
Northampton	241	241	--	--	28	19	49	32	610
Northumberland	458	71	--	--	126	39	211	114	1,019
Prince George	678	221	--	--	243	84	431	211	1,868
Princess Anne	67	130	--	3	257	98	120	86	761
Richmond	282	106	--	--	160	119	298	202	1,167
Southampton	1,128	732	92	224	702	714	554	565	4,711
Surry	818	378	23	20	322	160	170	309	2,200
Sussex	1,455	833	16	21	557	388	709	563	4,542
Westmoreland	327	74	--	--	147	74	276	260	1,158
York	345	352	2	--	180	193	290	242	1,604
Unit total	20,777	9,057	251	378	8,409	6,207	10,375	8,719	64,173

^{1/} Sound wood and bark.

Table 27.--Net volume^{1/} of all timber by county, species group, and diameter group,
1956 (continued)
(In thousand cords)

OTHER MATERIAL

County	Yellow pines		Other softwoods		Soft hardwoods		Hard hardwoods		All species
	5 - 12 inches	13+ inches	5 - 12 inches	13+ inches	5 - 12 inches	13+ inches	5 - 12 inches	13+ inches	
Accomack	110	25	--	--	121	36	24	7	323
Brunswick	--	13	--	--	59	42	48	12	174
Caroline	83	14	--	--	84	14	123	73	391
Charles City	10	3	--	--	25	29	46	20	133
Chesterfield	17	21	--	--	27	36	69	14	184
Dinwiddie	--	22	--	--	23	19	58	21	143
Essex	34	9	--	--	6	3	32	74	158
Gloucester	26	6	--	--	43	21	29	10	135
Greensville	13	6	--	21	73	13	51	15	192
Hanover	36	5	--	--	43	36	39	14	173
Henrico	9	--	--	--	18	26	38	4	95
Isle of Wight	14	8	8	--	57	35	38	83	243
James City	--	--	--	--	15	2	24	19	60
King and Queen	47	12	--	--	11	115	12	87	284
King George	28	2	--	--	16	8	17	18	89
King William	8	10	--	--	87	21	39	65	230
Lancaster	21	5	--	--	--	10	19	12	67
Mathews	9	3	--	--	11	12	15	2	52
Middlesex	21	4	--	--	12	12	29	22	100
Nansemond	--	--	--	--	44	71	74	38	227
New Kent	42	14	--	--	18	23	39	43	179
Norfolk	16	5	--	--	82	60	41	7	211
Northampton	13	--	--	--	13	3	12	5	46
Northumberland	16	--	--	--	46	16	38	26	142
Prince George	--	--	--	--	9	12	18	16	55
Princess Anne	7	--	--	--	55	26	39	17	144
Richmond	34	8	--	--	31	36	47	11	167
Southampton	11	--	--	--	99	204	87	13	414
Surry	5	6	--	--	13	55	57	52	188
Sussex	--	10	--	66	43	70	25	50	264
Westmoreland	50	--	--	--	7	3	19	12	91
York	1	--	--	--	17	8	7	5	38
Unit total	681	211	8	87	1,208	1,077	1,253	867	5,392

^{1/} Sound wood and bark.

Table 28.--Average annual volume of sawtimber cut by county and species group^{1/}

(In million board-feet)

County	Yellow pines	Other softwoods	Soft hardwoods	Hard hardwoods	All species
Accomack	55.8	--	--	2.2	58.0
Brunswick	10.2	--	--	1.1	11.3
Caroline	32.4	--	1.0	3.8	37.2
Charles City	4.7	--	--	1.7	6.4
Chesterfield	22.9	--	1.5	14.4	38.8
Dinwiddie	34.7	--	5.7	7.3	47.7
Essex	0.8	--	5.3	6.8	12.9
Gloucester	2.9	--	6.5	1.1	10.5
Greensville	34.0	--	7.6	6.3	47.9
Hanover	18.9	--	12.2	1.3	32.4
Henrico	2.2	--	8.8	3.9	14.9
Isle of Wight	14.1	--	4.8	3.4	22.3
James City	8.9	--	2.1	10.6	21.6
King and Queen	12.7	--	--	9.8	22.5
King George	2.1	--	0.2	8.1	10.4
King William	10.3	--	1.3	7.8	19.4
Lancaster	0.9	--	0.9	7.0	8.8
Mathews	14.3	--	--	--	14.3
Middlesex	5.3	--	--	3.4	8.7
Nansemond	15.9	--	0.9	7.9	24.7
New Kent	31.9	--	--	5.0	36.9
Norfolk	5.3	--	3.3	26.3	34.9
Northampton	6.6	--	0.1	0.3	7.0
Northumberland	0.7	--	3.9	--	4.6
Prince George	12.2	--	0.9	5.1	18.2
Princess Anne	11.0	--	2.0	3.3	16.3
Richmond	6.5	--	--	14.2	20.7
Southampton	17.2	--	4.3	14.8	36.3
Surry	11.3	--	2.6	1.7	15.6
Sussex	44.1	2.8	3.0	7.1	57.0
Westmoreland	1.1	--	0.3	7.2	8.6
York	6.0	--	0.9	4.5	11.4
Unit total	457.9	2.8	80.1	197.4	738.2

^{1/} Estimates of timber cut by county are less accurate than inventory volumes, and use of individual county statistics should be avoided. For general use, data for a minimum of 10 counties should be combined.

Table 29.--Average annual volume of growing stock cut by county and
species group^{1/}

(In thousand cords)

County	Yellow pines	Other softwoods	Soft hardwoods	Hard hardwoods	All species
Accomack	132	--	1	6	139
Brunswick	65	1	1	5	72
Caroline	158	--	3	15	176
Charles City	19	--	--	5	24
Chesterfield	86	--	19	52	157
Dinwiddie	149	--	21	36	206
Essex	3	--	15	18	36
Gloucester	14	--	15	3	32
Greensville	112	--	23	19	154
Hanover	71	--	26	6	103
Henrico	9	--	21	11	41
Isle of Wight	42	--	14	25	81
James City	23	--	8	32	63
King and Queen	42	--	3	30	75
King George	13	--	1	22	36
King William	45	--	5	20	70
Lancaster	2	--	5	21	28
Mathews	36	--	--	--	36
Middlesex	14	--	1	13	28
Nansemond	48	--	4	18	70
New Kent	97	--	1	14	112
Norfolk	12	--	8	62	82
Northampton	17	--	2	1	20
Northumberland	2	--	10	--	12
Prince George	48	--	5	14	67
Princess Anne	30	--	6	8	44
Richmond	26	--	2	38	66
Southampton	49	--	24	51	124
Surry	33	--	7	5	45
Sussex	142	5	12	20	179
Westmoreland	3	--	2	20	25
York	15	--	3	11	29
Unit total	1,557	6	268	601	2,432

^{1/} Estimates of timber cut by county are less accurate than inventory volumes, and use of individual county statistics should be avoided. For general use, data for a minimum of 10 counties should be combined.

DEFINITION OF TERMS

Land-Use Classes

Forest land: Includes (a) lands which are at least 10 percent stocked with trees of any size and capable of producing sawtimber or other wood products, and (b) lands from which the trees described in (a) have been removed to less than 10-percent stocking but which have not been developed for other use; subdivided into the following classes:

Commercial: Forest land which is (a) producing, or physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or in the future, and (c) not withdrawn from timber use.

Noncommercial: Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, or (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future.

Nonforest land: Includes land under cultivation or in pasture where the timber has been cleared to less than 10 percent stocking, idle or abandoned agricultural land, marsh land, and land in urban, residential, or industrial areas, school yards, cemeteries, roads, railroads, and other rights-of-way.

Water: Includes lakes, bays, and estuaries over 40 acres in size, and streams, canals, and sloughs at least one-eighth of a mile in width which are classed as "inland water" by the Bureau of the Census. Smaller lakes and ponds between one acre and 40 acres in size, and waterways between 120 feet and 660 feet in width, which are classed as land area by the Bureau of the Census, are also included as water areas.

Forest Types

Forest type is determined on the basis of cubic volume for all stand sizes except seedlings and saplings (stand size 4), in which case the number of stems is the criterion.

Yellow pine types: Forests in which 50 percent or more of the cubic volume or number of stems in the stand is loblolly, pond, shortleaf, or Virginia pine. In mixtures the predominating species determines the type.

Hardwood-pine type: Forests in which 50 percent or more of the stand is in hardwoods, but in which southern yellow pine species make up 25 to 49 percent of the stand.

Oak-hickory type: Upland hardwood forests in which 50 percent or more of the stand is composed of upland oak, hickory, yellow-poplar, soft maple, and other hardwood species, except in cases where yellow pines make up 25 to 49 percent and the stand would be classified as oak-pine.

Oak-gum-cypress type: Bottomland forests in which 50 percent or more of the stand is tupelo, blackgum, sweetgum, ash, lowland oak, elm, soft maple, cypress, and other associated species, except where pines comprise 25 to 49 percent of the stand.

Stand-Size Classes

Sawtimber: Stands containing at least 1,500 board-feet net volume per acre, International 1/4-inch log rule, in sound, live, softwood trees 9.0 inches d.b.h. or larger, or hardwood trees 11.0 inches d.b.h. or larger. Two classes of sawtimber stands are recognized:

Large sawtimber: Stands of sawtimber having more than 50 percent of the net board-foot volume in trees 15.0 inches d.b.h. or larger.

Small sawtimber: Stands of sawtimber having 50 percent or more of the net board-foot volume in trees smaller than 15.0 inches d.b.h.

Poletimber: Stands failing to meet the minimum sawtimber specifications, but at least 10 percent stocked with trees 5.0 inches d.b.h. or larger and with at least half the minimum stocking in pole-size trees.

Seedling and saplings: Stands not qualifying as sawtimber or poletimber stands, but having at least a 10-percent stocking of trees of commercial species and with half the minimum stocking in seedlings and saplings.

Nonstocked and other areas: Forest areas not qualifying as sawtimber, poletimber, or seedling and sapling stands.

Diameters

D.b.h. (diameter at breast height): Stem diameter in inches, outside bark, measured at 4-1/2 feet above the ground.

Diameter class: All trees were tallied by 2-inch diameter classes, each class including diameters 1.0 inch below and 0.9 inch above the stated midpoint, e.g., trees 7.0 to and including 8.9 inches are included in the 8-inch class. Corresponding limits apply to other diameter classes.

Timber Quality Classification

Growing Stock

Sawtimber trees: Live softwood trees 9.0 inches d.b.h. or larger and hardwood trees 11.0 inches d.b.h. or larger, with a sound volume of at least 50 percent of the gross board-foot volume up to the point of minimum saw-log merchantability. To be considered sound, a saw log must be at least 8 feet long, must be at least 50 percent sound, and must meet the following additional requirements:

Softwood logs^{1/} must have a scaling diameter of 6 inches or more, and sweep or crook must not exceed one-third of the scaling diameter per 8 feet of log length.

Hardwood logs must have a scaling diameter of 8 inches or more and must pass specifications^{2/} for standard lumber logs or tie and timber logs.

Sound poletimber trees: Straight-boled trees between 5.0 inches d.b.h. and sawtimber size that can be expected to become sawtimber.

Sound saplings: Trees 1.0 inch to 4.9 inches d.b.h. which show promise of growing into sawtimber.

Other Material

Sound cull trees: Live trees of all sizes that are unmerchantable for saw logs now or prospectively because of species, poor form, excessive limbiness, or other sound defect.

Rotten cull trees: Live trees of all sizes that are unmerchantable for saw logs now or prospectively because of rotten defect.

Species Groups

Yellow pines: Includes loblolly, pond, shortleaf, and Virginia pine.

Other softwoods: Cypress, eastern redcedar, and Atlantic whitecedar.

Soft hardwoods: Blackgum, tupelo, yellow-poplar, sweetgum, cottonwood, soft maple, basswood, magnolia, sweetbay, willow, elm, hackberry, sycamore, and black cherry.

Hard hardwoods: All the oaks, hickories, ash, beech, hard maple, river birch, black walnut, black locust, honey locust, mulberry, sourwood, dogwood, holly, and persimmon.

^{1/} For detailed specifications of log grades, see "Interim log grades for southern pine." Southern Forest Expt. Station, 18 pp. 1953.

^{2/} For detailed hardwood log grade specifications, see "Hardwood log grades for standard lumber: proposals and results." U. S. Forest Products Laboratory, D1737. 1949.

Volume Estimates

Board-foot volume: The volume in board-feet, measured by the International 1/4-inch rule, exclusive of defect, of that portion of sound sawtimber trees between the stump and the upper limit of merchantability for saw logs.

Volume in cords: For sound trees the volume in standard cords (including bark) of the sound portion of trees 5.0 inches d.b.h. or larger, between stump and a minimum top stem diameter of 4.0 inches inside bark. Similar volumes are given for cull trees.

Volume in cubic feet: Cubic-foot volume of the same material shown in cords except that bark is not included.

International 1/4-inch log rule: A rule for estimating the board-foot volume of 4-foot log sections, according to the formula $V = .905 (0.22D^2 - 0.71D)$. The taper allowance for computing the volume in log lengths greater than four feet is 0.5 inch per 4-foot section. Allowance for saw kerf is 1/4 inch.

Standard cord: A stacked pile, 4 x 4 x 8 feet, of round or split bolts, estimated to contain, on the average, about 74 cubic feet of solid wood.

Growth and Timber Cut

Net growth.--The growth on trees that were of volume size at the beginning of the year and the ingrowth resulting from smaller trees growing into volume size during the year, minus the partial loss of growth on trees that died or were cut during the year and the loss of volume in trees dying from natural causes during the year. Net growth is based on growth of sound trees. Growth on "Other material" is not included.

In board-feet: The change during the calendar year in sawtimber volume resulting from growth, ingrowth, and mortality losses.

In cubic feet or cords: The change during the calendar year in the volume of all sound trees 5.0 inches and larger resulting from growth, ingrowth, and mortality losses.

Timber cut.--The volume of timber cut is based on the measurement and tally of stumps found on regular ground sample plots. Stumps of all trees cut during the past 3-year period are recorded and the measurements are converted into equivalent tree volume. The average yearly volume of timber cut for the 3-year period is then taken as the annual estimate. Board-foot volumes include the saw-log portion of all sawtimber-size trees which were cut. Estimates in cubic feet or cords include the entire stem from stump to 4.0-inch top of all sound trees 5.0 inches in diameter and larger. Timber cut from cull or dead trees is not included.

Stocking

Stocking is the extent to which growing space is effectively utilized by trees. The number of stems present by d.b.h. classes was used as a basis for stocking classification. Areas having the minimum numbers of trees listed below, either in a single diameter class or proportionately in any combinations of diameter classes, were considered fully stocked.

<u>D.b.h.</u>	<u>Minimum number trees per acre</u>
Seedlings	1,000
2 inches	800
4 inches	590
6 inches	400
8 inches	240
10 inches	155
12 inches	115
14 inches	90

RELIABILITY OF FOREST SURVEY DATA

In general, the errors which affect the accuracy of Forest Survey area and timber volume estimates arise from two sources. These may be described as (1) sampling errors which result from using sampling procedures rather than making a complete inventory or canvass, and (2) non-sampling errors which arise from human mistakes in judgment, measurement, recording, or arithmetic.

In Forest Survey work a diligent effort is made to maintain a high degree of accuracy in the collection and compilation of data. The sampling errors are held to a specified minimum through survey design and sampling technique. These errors are the only measurable errors involved in computing the reliability of the data. The non-sampling errors are minimized or eliminated through training, supervision, field check cruises, and complete editing and machine verification in compiling the data.

Forest area.--The sampling intensity of the 1956 survey provided an estimate of the total forest area with a standard error of ± 0.7 percent. The probabilities were two out of three that the actual forest area was within ± 0.7 percent of the estimated acreage. The standard error per million acres was ± 1.4 percent.

Cubic volume.--The standard error of the net cubic-foot volume estimate was ± 2.4 percent, or ± 5.2 percent per billion cubic feet. Here again, the probabilities were two out of three that the actual volume did not vary from the estimated volume by more than these percentages. The error of the volume in cords was not computed, but it should have been approximately the same as for cubic volume.

Board-foot volume.--The standard error of the total board-foot volume estimate was ± 2.9 percent.

Growth.--Estimates of timber growth were based on measurements of radial growth on 3,696 sample trees, and on mortality data taken on sample plots. Because of technical problems involved, no attempt was made to compute the sampling error of growth estimates.

Timber cut.--Estimates of the amount of timber cut were based on the number, size, and species of stumps tallied on cutover plots. Stumps of all trees cut during the 3-year period preceding the date of inventory were included, and the measurements were converted into tree volume. The average volume of timber cut for the 3-year period was taken as the annual estimate. The standard error for the total volume of growing stock cut was ± 8.8 percent, or ± 3.7 percent per billion cubic feet.

Use of county data.--The tables showing forest area, timber volumes, and timber cut by county are included to permit grouping of the data in any desired area combinations. In designing the survey, provision was made for controlling the range of sampling error on a county basis. However, comparison or use of individual county statistics should be avoided because of the possibility that they may be subject to considerable error. It is recommended that area or volume data for a minimum of five counties be combined, and that at least 10 counties be used when working with data on timber cut.

The actual range of errors in county data are as follows:

<u>Item</u>	<u>Percent of error</u>	
	<u>Low</u>	<u>High</u>
Forest area	± 1.1	± 6.2
Growing stock volume	± 8.0	± 13.1
Board-foot volume	± 8.9	± 14.6

HOW THE FOREST INVENTORY IS MADE

The present system of inventory is a two-step method which includes land-use classification of points on aerial photographs followed by the cruising of ground sample plots. The county is the basic work unit. The detailed procedure is as follows:



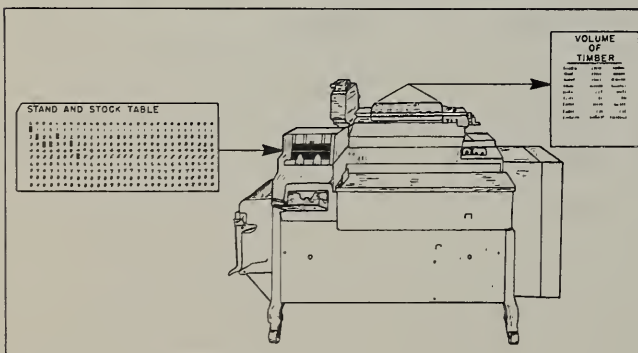
1. Preliminary estimates of the acreage of land in forests and other land-use classes are obtained by classifying points printed on every third aerial photograph in alternate flight lines within a county. The proportion of points falling in each class is used to estimate the acreage. This estimate is later checked and revised through the use of ground plots.



2. Ground sample plots are selected in a systematic manner from the forest land classifications made in Step 1, using an interval which will provide sufficient plots to meet established limits of error per billion cubic feet of timber. This results in a proportional sample of all existing timber stands. Timber cruisers make a detailed description and tally of the ground plots to obtain data on timber volume, quality, stocking, mortality, and timber cut. Samples of agricultural and other photo classifications are also checked on the ground to verify or adjust the area estimates based on these classifications.



3. Growth estimates are based on increment borings taken proportionally from sample trees of various diameters and species in each forest type and stand class. The volume of timber cut is computed from a tally of the stumps of trees cut on the plots during a specified period.



4. All field data are sent to Asheville for editing and are placed on punch cards for machine sorting and tabulation. Final estimates are based on statistical summaries of the data.

Forest Survey Reports Published Since 1945

Forest Statistics:

- No. 25 - Forest Resources of the Lower Coastal Plain of South Carolina
- No. 26 - 1946 Commodity Drain by County from South Carolina Forests
- No. 28 - South Carolina's Forest Resources, 1947
- No. 30 - Forest Resources of Northeast Florida, 1949
- No. 31 - Forest Resources of Central Florida, 1949
- No. 32 - Forest Resources of Northwest Florida, 1949
- No. 33 - Forest Resources of South Florida, 1949
- No. 34 - Timber Production and Commodity Drain from Florida's Forests, 1948
- No. 36 - Forest Statistics for Florida, 1949
- No. 37 - Forest Statistics for Southwest Georgia, 1951
- No. 39 - Forest Statistics for Southeast Georgia, 1952
- No. 40 - Forest Statistics for Central Georgia, 1952
- No. 41 - Forest Statistics for the Southern Coastal Plain of North Carolina, 1952
- No. 42 - Forest Statistics for North Central and North Georgia, 1953
- No. 44 - Forest Statistics for Georgia, 1951-53
- No. 45 - Forest Statistics for the Northern Coastal Plain of North Carolina, 1955
(out of print)
- No. 46 - Forest Statistics for the Mountain Region of North Carolina, 1955
- No. 48 - Forest Statistics for the Piedmont of North Carolina, 1956
- No. 49 - North Carolina's Timber Supply, 1955

Pulpwood Production:

- No. 21 - 1945 Pulpwood Production by County in the Carolinas and Virginia
- No. 23 - 1946 Pulpwood Production by County in the Southeast
- No. 27 - 1947 Pulpwood Production by County in the Southeast
- No. 29 - 1948 Pulpwood Production by County in the Southeast
- *No. 35 - 1949 Pulpwood Production in the South (out of print)
- *No. 69 - Pulpwood Production in the South, 1950
- *No. 38 - 1951 Pulpwood Production in the South
- *No. 72 - 1952 Pulpwood Production in the South
- *No. 43 - 1953 Pulpwood Production in the South
- *No. 76 - 1954 Pulpwood Production in the South
- *No. 47 - 1955 Pulpwood Production in the South (out of print)

Other Reports

Southern Forests as a Source of Pulpwood. Forest Survey Release No. 22
Southern Pulpwood Production and the Timber Supply. Forest Survey Release No. 24
Virginia Forest Resources and Industries, 1949. U. S. Dept. Agr. Misc. Pub. No. 681
The Timber Supply Outlook in South Carolina, 1951. U. S. Dept. Agr. Resource Report
No. 3
The Timber Supply Situation in Florida, 1952. U. S. Dept. Agr. Resource Report No. 6
The Timber Supply Situation in Georgia, 1956. U. S. Dept. Agr. Resource Report No. 12

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